A METHOD OF OPERATING

FOR

DIVERGENT SQUINT.

By C. R. AGNEW, M.D.

The method is as follows. The patient having been placed upon his back, and under the full influence of an anæsthetic, and the eye to be operated upon exposed by the wire speculum, an assistant draws the cornea as much as possible towards the outer canthus by catching the tissues over the tendon of the external rectus muscle in the blades of a pair of fixation forceps. The operator then makes a horizontal opening over the internal rectus muscle, midway between its borders, and extending from a point one line distant from the cornea down to the semi-lunar fold. This opening should be made by lifting a vertical fold of the conjunctiva and sub-conjunctival tissues with forceps, and cutting these with scissors in a horizontal direction. If care is exercised, the internal rectus muscle will be exposed without any difficulty or the occurrence of much bleeding. The next step is to secure the entire tendon of the muscle which is to be brought forward. This is especially essential in those cases in which the divergent squint has been the result of the operation for convergent squint; for in such cases the tendon and theca, having been much haggled in the original tenotomy, fall back irregularly, and, being split more or less, form false insertions, which are zigzag or interrupted.

After the apparent insertion of the muscle has been brought into view, a strabismus hook, having an eye drilled in its free extremity, and armed with a waxed silk, is made to sweep

beneath it, from below upwards, care being taken to keep the instrument in close contact with the sclerotic, and carried so far back as to include every straggling band of muscle or theca which is to be advanced.

The uplifted mass should then be tied close to its sclerotic implantation. The next step is to divide the external rectus muscle freely through a horizontal wound in the conjunctiva, and thus complete the preliminary steps for the advancement of the internal rectus. The latter step is effected as follows. The operator, holding the ligature firmly in one hand, should cut with scissors the insertion of the muscle and gently break up any bands of connective tissue which may attach it to the sclerotic. As he does this, he should draw upon the ligature and sway it from side to side until it becomes evident that any adhesions which might obstruct the advancement of the muscle have been overcome. He should now estimate the amount of adduction which may be necessary to cure the divergence. This he can do by catching with forceps the sclerotic edge of the cut tendon of the external rectus and drawing the cornea towards the inner canthus, while he holds up upon the stretch the muscle to be advanced. The retentive sutures are now to be placed. For this purpose two delicate, short and sharply curved needles are to be armed with fine, well waxed silk and adapted to a needle-holder.[1]

Having measured the extent to which the eyeball must be adducted in order to correct the divergence, the sutures should be passed through the muscle and its theca as far from its cut end as may be necessary. The muscle should be drawn well out and kept upon the stretch, so that the sutures may be passed through it as deeply as possible behind the caruncle, to secure a firm hold, and to leave a somewhat longer mass between the perforations made by the sutures and the ligature upon its cut end than the original divergence measured. The course of the sutures should be perpendicular to the plane of the muscle, one passing through near its upper margin, and the other near its lower. After the sutures have been placed in the muscle the

[1] The needle-holder of Dr. H. B. Sands, New York, is decidedly the best for this purpose.

end included in the ligature should be cut off, care being taken to leave enough to prevent their tearing out. The amount cut should nearly equal the degree of divergence to be corrected, allowance being made for shrinkage which has followed the detachment of the muscle from the sclerotic. The next step is to carry the sutures beneath the conjunctiva above and below the cornea. It is better to place the upper suture first. This also requires the curved needle. The point aimed at in carrying the needle along the sclerotic, beneath the conjunctiva, should be about a line above the cornea and over the centre of the line of implantation of the superior rectus muscle, and there the suture should emerge. Before tying the upper the lower suture should be brought out at a corresponding point over the inferior rectus insertion. While the operator is cautiously tying the sutures his assistant should, catching hold of the insertion of the external rectus, carry the cornea towards the internal canthus as much as possible, and thus effect what may be considered the real intention of the operation, namely, to adduct the eye strongly, and thus place the end of the *shortened* internal rectus in co-aptation with the sclerotic at the natural line of sclerotic implantation. The exercise of a little care will cause the muscle to spread out and be hidden behind the horizontal pillars of the wound through which the retentive sutures have been carried; and thus insuring a consolidation of the wounded parts, obtain the aid of the subsequent cicatricial contraction of the soft parts intervening between the cornea and the caruncle in the ultimate result. Whether this method be adopted throughout or not, I am quite sure that the use of the strabismus hook, armed with a ligature, will be found of great advantage in getting control over the tendon to be advanced, and making the surgeon feel sure that he has secured the entire mass. I have employed the method upon two eyes which had been rendered divergent by operations for convergent squint performed by a wandering quack. In one of these eyes the divergence was more than five lines, in the other about four. In the first eye I induced a small amount of convergent squint, which was cured by applying the glass, which neutralized existing hypermetropia. In the second case I produced a very slight degree of convergence, not exceeding a line, which was also

removed by the use of the proper glasses. And in both these cases the existence of hypermetropia would have rendered glasses necessary, aside from any convergence.

I have also satisfactorily performed the operation in two cases in which slight paresis of the internal rectus, the result of injury, had led to divergent squint.

In one case, in which the divergence was so great that one-fourth of the cornea was buried beneath the external canthus, the result was only partially successful; but I propose to repeat the operation after the cicatrix over the region of the internal rectus has so matured and softened as to render a repetition of the steps possible.

I have not seen any inflammation of an annoying character following the procedure, and my experience thus far justifies me in employing the method in preference to any other, as I believe that the risk to the eye is very much less than by any other, and the probability of success greater. I believe that the chance of success is greatly increased by dividing the external rectus of the fellow-eye, even though you propose to advance the internal rectus of one eye only.